Amendment of Claim 30

Applicant has amended without prejudice claim 30 as indicated above to better encompass the full scope and breath of the invention, notwithstanding Applicant's belief that the claim would have also been allowable in its original form.

Rejection of Claims 3, 4, 20, 21, 44, 45, 53 and 63 under 35 U.S.C. § 112

Claims 3, 4, 20, 21, 44, 45, 53 and 63 stand rejected under 35 U.S.C. § 112 as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Applicant has amended these claims as indicated above and respectfully requests removal of the rejection.

As amended, claims 3, 4, 20, 21, 44, 45, 53 and 63 recite "page description language." "Page description language" represents a nonproprietary name by which a particular type of programming language would be understood among those skilled in the art. For example, according to Kumazaki et al., U.S. Patent No. 5,555,360 ("Kumazaki"), "A typical system is the PostScript system from Adobe Co., and the PostScript is a kind of <u>a programming language which is generally known as the Page Description Language</u> (PDL)." Kumazaki Col. 2, lines 38-45 (emphasis added). Since the meaning of "page description language" is understood in the art, as illustrated by the citation from Kumazaki, recitation of "page description language" in the current claims is sufficiently definite to point out and distinctly claim the subject matter of the invention. Support for these amendments includes the original claims directed to an Adobe character, which, per the above discussion, would be understood in the art to include a page description language.

As amended, claims 4, 21 and 45 recite "type 1," which represents a nonproprietary name by which a particular digital type font is known among workers in the art. According

to *TrueType & PostScript Type 1: What's the Difference?*, PostScript <u>type 1</u> constitutes a multi-platform outline font standard for which technical specifications are openly available. *See* Thomas W. Phinney, *TrueType & PostScript Type 1: What's the Difference?*, p. 1 (http://www.truetype.demon.co.uk/articles/ttvst1.htm). Analogously, according to *Fast Facts Electronic Publishing Articles*, "<u>Type 1</u> is the name of the worldwide standard for digital type software" and was developed by Adobe Systems for use in PostScript™ printers. Print Communications (PrintComm), *Fast Facts Electronic Publishing Articles, Article #1 (Part 1 of 2): True Type or Adobe Type 1?* (http://www.comm.media.state.mn.us/printing/ElecPubArt.htm) (emphasis added). Similarly, according to PrintComm, "<u>Type 1</u> fonts by Adobe . . . are the de facto standard in the printing industry." *Id., Article #1 (Part 2 of 2): True Type Font Issues?* (emphasis added). Consequently, since the meaning of "type 1" is well-known and satisfactorily defined in literature, recitation of "type 1" in the current claims is sufficiently definite to point out and distinctly claim the subject matter of the invention.

In light of the preceding discussion, Applicant respectfully requests removal of the rejection under § 112, second paragraph, of claims 3, 4, 20, 21, 44, 45, 53 and 63.

Rejection of Claim 1 under 35 U.S.C. § 102(b)

Claim 1 stands rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent Number 5,565,886 ("Gibson"). Applicant respectfully traverses the rejection of claim 1.

Claim 1 states,

> 1. A method of displaying a character, the method comprising:
> determining a representation of a character in a bit map having a number of bits greater than a number of pixels in a region of a display in which the character is to be displayed;

based on a relative number of bits that are on in respective portions of the bit map, determining luminances for corresponding pixels; and

displaying the character in the region having the particular number of pixels, the pixels being displayed with the determined luminances.

(emphasis added).

One embodiment of the invention claimed in this claim includes the advantage of providing a convenient way to antialias a character. Antialiasing is not new; however, the method claimed here can serve as a new and beneficial approach to antialiasing, with advantages over some prior systems that use complex geometric calculations to perform antialiasing.

Gibson does not disclose, teach or suggest the claimed invention. Rather, Gibson is directed to the problem of displaying characters that have already been antialiased. *See* Gibson col. 4, lines 50-56. For example, Gibson does not show, "based on a relative number of bits that are on in respective portions of the bit map, determining luminances for corresponding pixels." (emphasis added). Rather, Gibson shows, for purpose of displaying a pixel of an already antialiased representation and for which luminance has already been determined, a way to encode the color of the already converted pixel and to transmit this encoded color of the pixel to the raster. *See* Gibson col. 3, lines 50-67, col. 4, line 1. Gibson's method attempts to provide efficient transmission of the corresponding data.

For example, Figure 2B of Gibson shows an already antialiased character on which Gibsons's invention may operate. Gibson explains how this character is displayed. Gibson does not determine luminances for individual pixels based on the relative number of bits that are on in respective portions of the bitmap here, nor is such a technique disclosed elsewhere in Gibson.

Consequently, Gibson fails to disclose or teach the invention of claim 1. Further, since Gibson is directed to a problem which is different from the problem solved by claim 1, there is <u>no motivation</u> in Gibson to arrive at the invention of claim 1.

Rejection of Claims 2-65 under 35 U.S.C. § 103(a)

Claims 2-65 stand rejected under 35 U.S.C. § 103(a). The Office Action refers to U.S. Patent Number 5,565,886 ("Gibson") and U.S. Patent Number 5,555,360 ("Kumazaki"). Applicant respectfully traverses the rejection of claims 2-65.

Since claim 2 depends from claim 1, claim 2 is patentable for at least the reasons articulated above in support of claim 1.

Furthermore, Applicant believes that claim 2 is independently patentable. As discussed above, Gibson fails to disclose, " . . . <u>based on a relative number of bits that are on</u> in respective portions of the bit map, <u>determining luminances</u> for corresponding pixels." The Office Action cites Kumazaki col. 2, lines 49-56 for vector image processing. This additional material from Kumazaki also fails to teach " . . . <u>based on a relative number of bits that are on</u> in respective portions of the bit map, <u>determining luminances</u> for corresponding pixels." Consequently, even in combination, Gibson and Kumazaki do not disclose, teach or suggest the invention claimed in claim 2. Claim 2 is therefore patentable, and Applicant respectfully requests its allowance.

Claims 3-15 depend directly or indirectly from valid claim 1. Consequently, claims 3-15 are patentable for at least the reasons articulated in support of claim 1.

Further, Applicant believes that claims 3-15 are independently patentable. For example, claim 8 recites, " . . .the luminance of a pixel is substantially at a minimum level if substantially all of the bits in the corresponding bit map are on." The Office Action rejects

claim 8 by citing Gibson col. 2, lines 20-27 and Kumazaki col. 1, lines 49-55. Applicant respectfully disagrees with the Office Action's characterization of Gibson and Kumazaki.

None of the cited material discloses, teaches or suggests " . . . the luminance of a pixel is substantially at a minimum level if substantially all of the bits in the corresponding bit map are on." As noted, Gibson is directed to the problem of displaying characters that have already been antialiased. *See* Gibson col. 4, lines 50-56. Gibson teaches how to encode the color of an already antialiased pixel with a predetermined luminance and how to transmit this encoded color to the display device. *See* Gibson col. 3, lines 50-67, col. 4, line 1. The "bitmap" described in the background of Gibson (see, e.g., col. 2, lines 46-59) employs multiple bits per pixel to encode different levels of illuminative intensity for each pixel of such already antialiased characters. In Gibson's bitmap, the multiple bits associated with each pixel encode a <u>value</u> for the illuminative intensity of the corresponding pixels. *See* Gibson, col. 2, lines 53-55. *See also* Gibson, Figure 2B (showing the illuminative intensity values in base 10 for the <u>already antialiased</u> representation of letter "A" from Figure 2A). As shown in Figure 2B, Gibson's bitmaps are essentially two dimensional number arrays, where each number corresponds to a specific pixel of an <u>already antialiased</u> character to be displayed, and where each number represents the illuminative intensity of the corresponding pixel encoded in binary by an appropriate number of bits. In Gibson, the bits associated with each pixel constitute a <u>binary number</u>, which encodes a specific value in base 2 with a corresponding value in base 10. The binary number system employed in Gibson's bitmaps does not encode illuminative intensities based on the number of bits that are "on," but rather relies on conventional numerical principles. In claim 8, in contrast, the luminance of a pixel is substantially at a minimum level <u>if substantially all of the bits in the corresponding bit map are on</u>.

Gibson would not operate according to its intended purpose if one were to modify it to include the additional features of claim 8. The method for transmitting display data disclosed by Gibson relies on binary encoding of illuminative intensity values to generate "raster planes" which Gibson employs to decrease the amount of information transferred to the display device. *See, e.g.,* Gibson col. 3, lines 56-60. If one were to use the number of bits on in the binary encoded numbers of Gibson to determine luminance, one would arrive at unpredictable luminance values because the numbers in the bitmap of Gibson represent corresponding "raster planes" and are not proportional to the intensity of the corresponding pixel.

Further, one would have no motivation to make such a modification of Gibson, even in view of Kumazaki, because the characters of Gibson are already antialiased, thus there is no need to determine the luminance of a pixel - it has already been determined.

Consequently, Gibson and Kumazaki do not disclose, teach or suggest the present invention, either alone or in combination. Claim 8 is therefore patentable, and Applicant respectfully requests its allowance.

Claim 9 recites, " . . .the luminance of a pixel is substantially maximum if substantially all of the bits in the corresponding bit map are off." The Office Action rejects claim 9 by relying on the same material which was cited for claim 8. As discussed above, Gibson is directed to a problem which is different from the problem solved by claim 9. For example, the multiple bits per pixel in Gibson encode binary values for the illuminative intensities of pixels associated with already antialiased characters. In contrast, the invention of claim 9 teaches a method of displaying a character in which pixel luminances are determined in reference to the "off" state of bits in a corresponding bitmap. Thus, there exists no motivation in Gibson or Kumazaki to arrive at the invention of claim 8 because the

luminances of pixels in Gibson are <u>already</u> <u>determined</u> because the characters are already antialiased. Further, if the bitmap of Gibson were used to determine luminances of the corresponding pixels based on the number of bits off, the corresponding pixel would not be properly displayed since Gibson's bitmap encodes <u>binary</u> <u>values</u> where the <u>number</u> of bits off would not be <u>proportional</u> to the luminance. The luminance for Gibson's pixels would have an unpredictable value. Therefore, even in combination, Gibson and Kumazaki fail to render claim 9 obvious. Claim 9 is therefore patentable, and Applicant respectfully requests its allowance.

Claim 11 recites, " . . . counting the number of bits that are on in the four sets of 4 bits." In rejecting claim 11, the Office Action relies on Gibson col. 2, lines 45-47. The cited material, however, simply recites that antialiased characters require bitmaps that reflect different levels of illuminative intensity of each pixel where the value of the <u>pixel</u> is not "on" or "off". The cited material does not refer to <u>counting</u> the number of <u>bits in the bitmap</u> that are "on" or "off", and is instead discussing <u>pixels</u>, which have values other than "on" or "off".

Further, the cited material illustrates that Gibson is not directed to the problem solved by the invention of claim 11. The cited material is referring to already antialiased characters represented in a bitmap. The reason the pixels have intensities other than "on" and "off" is that the characters have been <u>antialiased already</u>. Thus, there would be no motivation, in view of Gibson, to count the number of bits that are on in a set of four bits in order to provide an advantageous antialiasing technique because the character has been antialiased already.

As discussed above, Kumazaki discloses an antialiasing method which employs complex mathematical computations. In contrast, claim 11 teaches setting pixel illuminative intensities by counting the number of bits that are "on" in a corresponding area of a bitmap.

The invention of claim 11 provides the advantage of obviating the need for Kumazaki's complex mathematics and their assorted computational requirements. Kumazaki fails to teach or suggest the advantageous approach of claim 11. Thus, even in combination, Gibson and Kumazaki fail to teach all of the elements claimed in claim 11. Consequently, claim 11 is patentable, and Applicant respectfully requests its allowance.

Claim 16 recites, inter alia, "logic that, <u>based on a relative number of bits that are on</u> in respective portions of the bit map, <u>determines luminances</u> for corresponding pixels . . ." (emphasis added). As discussed above, Gibson and Kumazaki fail to teach "logic that, <u>based on a relative number of bits that are on</u> in respective portions of the bit map, <u>determines luminances</u> for corresponding pixels . . ." either individually or in combination. Consequently, Applicant believes that claim 16 is patentable and respectfully requests its allowance.

Claims 17-29 depend from valid claim 16. Consequently, claims 17-29 are patentable for at least the reasons provided above in support of claim 16, and Applicant believes that it is not necessary to address the particular grounds of rejection provided in the Office Action. Claims 17-29 are therefore patentable, and Applicant respectfully requests their allowance.

As amended, independent claim 30 recites, inter alia, " . . . <u>based on a relative number of bits that are on</u> in respective portions of the bit map, <u>determining luminances</u> for corresponding pixels." (emphasis added). Applicant believes that claim 30 is not obvious in view of Gibson. As discussed above, Gibson is directed to display of <u>already antialiased</u> characters. Therefore, there is no teaching in Gibson and no motivation for " . . . <u>based on a relative number of bits that are on</u> in respective portions of the bit map, <u>determining luminances</u> for corresponding pixels." (emphasis added). Consequently, Applicant believes that claim 30 is patentable and respectfully requests its allowance.

Claims 31-38 depend from, and further limit valid claim 30. Consequently, claims 31-38 are patentable for at least the reasons provided above in support of claim 30.

Further, Applicant believes that claims 31-38 are independently patentable. For example, claim 31 recites, inter alia, "wherein determining luminances comprises counting a number of bits on in a portion of the bit map corresponding to a pixel." (emphasis added). Claim 31 was rejected as unpatentable in view of Gibson and Kumazaki. Gibson and Kumazaki, however, fail to disclose, teach or suggest "wherein determining luminances comprises counting a number of bits on in a portion of the bit map corresponding to a pixel" either individually or in combination. Neither Gibson nor Kumazaki discloses or suggests how to determine pixel luminances by "counting a number of bits on" in a portion of a bitmap corresponding to a pixel. Instead, as discussed above, Gibson attempts to efficiently transmit to a display device data which includes multiple bits per pixel, while Kumazaki teaches how to employ mathematical and geometrical methods to compute pixel luminances. Consequently, Applicant believes that claim 31 is patentable and respectfully requests its allowance.

Independent claim 39 recites, inter alia, "logic that, based on a relative number of bits that are on in respective portions of the bit map, determines luminances for corresponding pixels . . . ." (emphasis added). Claim 39 was rejected in view of Gibson and Kumazaki. The material cited from Gibson and Kumazaki, however, fails to disclose, teach or suggest "logic that, based on a relative number of bits that are on in respective portions of the bit map, determines luminances for corresponding pixels . . . " either individually or in combination. Consequently, Applicant believes that claim 39 is patentable and respectfully requests its allowance.

Claims 40-49 depend from valid claim 39. Consequently, claims 40-49 are patentable for at least the reasons provided above in support of claim 16, and Applicant believes that it is not necessary to address the particular grounds of rejection provided in the Office Action. Claims 40-49 are therefore patentable, and Applicant respectfully requests their allowance.

Independent claim 50 recites, inter alia, "computer readable program code means for, based on a relative number of bits that are on in respective portions of the bit map, determining luminances for corresponding pixels . . . ." (emphasis added). Claim 50 was rejected in view of Gibson and Kumazaki. Gibson and Kumazaki, however, fail to disclose, teach or suggest "computer readable program code means for, based on a relative number of bits that are on in respective portions of the bit map, determining luminances for corresponding pixels . . . ." either individually or in combination. Consequently, Applicant believes that claim 50 is patentable and respectfully requests its allowance.

Claims 51-55 depend from valid claim 50. Consequently, claims 51-55 are patentable for at least the reasons provided above in support of claim 50, and Applicant believes that it is not necessary to address the particular grounds of rejection provided in the Office Action. Claims 51-55 are therefore patentable, and Applicant respectfully requests their allowance.

Claim 56 recites, inter alia, "logic that, based on a relative number of bits that are on in respective portions of the bit map, determines an attribute for corresponding pixels . . . ." (emphasis added). Claim 56 was rejected in view of Gibson and Kumazaki. Gibson and Kumazaki, however, fail to disclose, teach or suggest "logic that, based on a relative number of bits that are on in respective portions of the bit map, determines an attribute for corresponding pixels . . . ." either individually or in combination. Consequently, Applicant believes that claim 56 is patentable and respectfully requests its allowance.

Claims 57-65 depend from valid claim 56. Consequently, claims 57-65 are patentable for at least the reasons provided above in support of claim 56, and Applicant believes that it is not necessary to address the particular grounds of rejection provided in the Office Action. Claims 57-65 are therefore patentable, and Applicant respectfully requests their allowance.
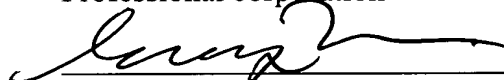
CONCLUSION

For the reasons discussed above, Applicant believes that the application is in condition for allowance and respectfully requests its allowance.

The Commissioner is authorized to charge any additional fees which may be required, including petition fees and extension of time fees, to Deposit Account No. 23-2415 (Docket No. 17201-706). A duplicate copy of this paper is enclosed.

Respectfully submitted,

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